



43

SEQUENCE LISTING

<110> Summers, Anne O.
Caguiat, Jonathan

<120> Metal Binding Proteins, Recombinant Host Cells and
Methods

<130> 79-00

<140> unassigned

<141> 2001-10-12

<150> US 60/240,465

<151> 2000-10-12

<160> 18

<170> PatentIn Ver. 2.0

<210> 1

<211> 435

<212> DNA

<213> Shigella flexneri, Tn21 of Plasmid R100

<400> 1

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ggcagcatcc gccgctatgg ggaggcggac gtggttcggg tgaaattcgt gaaatcggca 180
cagcggtctg gggttcagtct ggacgagatt gccgagctgt tgcggctcga cgatggcacc 240
cactgcgagg aggccagcag cctggccgaa cacaagctca aggacgtgcg cgagaagatg 300
gccgacttgg cgcgcatgga aaccgtgctg tctgaactcg tgtgcgcctg ccatgcacga 360
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<210> 2

<211> 144

<212> PRT

<213> Shigella flexneri, Tn21 of Plasmid R100

<400> 2

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Met Glu Asn Asn Leu Glu Asn Leu Thr Ile Gly Val Phe Ala Lys Ala
  1                      5                      10                      15
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Ala Gly Val Asn Val Glu Thr Ile Arg Phe Tyr Gln Arg Lys Gly Leu
      20                      25                      30
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Leu Arg Glu Pro Asp Lys Pro Tyr Gly Ser Ile Arg Arg Tyr Gly Glu
      35                      40                      45
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Ala Asp Val Val Arg Val Lys Phe Val Lys Ser Ala Gln Arg Leu Gly
      50                      55                      60
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Phe Ser Leu Asp Glu Ile Ala Glu Leu Leu Arg Leu Asp Asp Gly Thr
 65 70 75 80
 His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val
 85 90 95
 Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu
 100 105 110
 Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Leu
 115 120 125
 Ile Ala Ser Leu Gln Gly Glu Ala Gly Leu Ala Arg Ser Ala Met Pro
 130 135 140

<210> 3
 <211> 321
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: chelon

<400> 3
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 aagatggccg acttggcgcg catggaaacc gtgctgtctg aactcgtgtg cgcctgccat 120
 gcacgaaagg ggaatgtttc ctgcccgttg atcgcgctcac tacagggatc ctcaggcacc 180
 cactgcgagg aggccagcag cctggccgaa cacaagctca aggacgtgcg cgagaagatg 240
 gccgacttgg cgcgcatgga aaccgtgctg tctgaactcg tgtgcgcctg ccatgcacga 300
 aaggggaatg tttcctgccc g 321

<210> 4
 <211> 117
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: chelon

<400> 4
 Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
 1 5 10 15
 Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu
 20 25 30
 Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
 35 40 45
 Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
 50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
100 105 110

Pro Gln Phe Glu Lys
115

<210> 5
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: chelon

<400> 5
Met Thr His Cys Glu Glu Val Ser Ser Leu Ala Glu His Lys Leu Lys
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
50 55 60

Val Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
100 105 110

Pro Gln Phe Glu Lys
115

<210> 6
<211> 118
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: chelon

<400> 6

Met Thr His Cys Glu Glu Ala Ser Ser Leu Val Glu His Lys Leu Lys
1 5 10 15

Asp Val Arg Glu Lys Thr Met Ala Asp Leu Ala Arg Met Glu Thr Val
20 25 30

Leu Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser
35 40 45

Cys Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu
50 55 60

Glu Ala Ser Ser Leu Val Glu His Lys Leu Lys Asp Val Arg Glu Lys
65 70 75 80

Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys
85 90 95

Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser
100 105 110

His Pro Gln Phe Glu Lys
115

<210> 7

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 7

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
1 5 10 15

Asp Val Arg Glu Thr Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Thr Met
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
 100 105 110

Pro Gln Phe Glu Lys
 115

<210> 8
 <211> 117
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: chelon

<400> 8
 Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
 1 5 10 15

Asp Val Arg Glu Gln Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu
 20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
 35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
 50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Gln Met
 65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala
 85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
 100 105 110

Pro Gln Phe Glu Lys
 115

<210> 9
 <211> 117
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: chelon

<400> 9
 Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
 1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Val Glu Thr Val Leu
 20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met
65 70 75 80

Ala Asp Leu Ala Arg Val Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
100 105 110

Pro Gln Phe Glu Lys
115

<210> 10

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 10

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Ile Glu Thr Val Leu
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met
65 70 75 80

Ala Asp Leu Ala Arg Ile Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
100 105 110

Pro Gln Phe Glu Lys
115

<210> 11

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 11

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Pro Cys
35 40 45

Pro Leu Ile Ala Ser Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Pro Cys Pro Ser Ala Trp Ser His
100 105 110

Pro Gln Phe Glu Lys
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<210> 12

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: chelon

<400> 12

Met Thr His Cys Glu Glu Ala Ser Ser Leu Ala Glu His Lys Leu Lys
1 5 10 15

Asp Val Arg Glu Lys Met Ala Asp Leu Ala Arg Met Glu Thr Val Leu
20 25 30

Ser Glu Leu Val Cys Ala Cys His Ala Arg Lys Gly Asn Val Ser Cys
35 40 45

Pro Leu Ile Ala Leu Leu Gln Gly Ser Ser Gly Thr His Cys Glu Glu
50 55 60

Ala Ser Ser Leu Ala Glu His Lys Leu Lys Asp Val Arg Glu Lys Met
65 70 75 80

Ala Asp Leu Ala Arg Met Glu Thr Val Leu Ser Glu Leu Val Cys Ala
85 90 95

Cys His Ala Arg Lys Gly Asn Val Ser Cys Pro Ser Ala Trp Ser His
100 105 110

Pro Gln Phe Glu Lys
115

<210> 13
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 13
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33

<210> 14
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 14
gcctgaggat ccctgtagtg acgcgatcaa cgg

33

<210> 15
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 15
ctacagggat cctcaggcac ccactgcgag

30

<210> 16
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 16
ctgtagggtc tggcgctcg ggcaggaaac att

33

<210> 17
<211> 354
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: sequence
encoding chelon

<400> 17
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aagatggccg acttggcgcg catggaaacc gtgctgtctg aactcgtgtg cgctgccat 120
gcacgaaagg ggaatgtttc ctgcccgttg atcgcgtcac tacagggatc ctcaggcacc 180
cactgcgagg aggccagcag cctggccgaa cacaagctca aggacgtgcg cgagaagatg 240
gccgacttgg cgcgcatgga aaccgtgctg tctgaactcg tgtgcgcctg ccatgcacga 300
aaggggaatg tttctgccc gagcgcttgg agccaccgc agttcgaaaa ataa 354

<210> 18
<211> 509
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:sequence
encoding chelon flanked by sequences derived from
plasmid

<400> 18
ccatcgaatg gccagatgat taattcctaa tttttgttga cactatcatt gatagagtta 60
ttttaccact ccctatcagt gatagagaaa agtgaaatga atagttcgta caaaaatcta 120
gataacgagg gcaaaaaatg acacactgcg aggaggccag cagcctggcc gaacacaagc 180
tcaaggacgt gcgcgagaag atggccgact tggcgcgcac ggaaaccgtg ctgtctgaac 240
tcgtgtgcgc ctgccatgca cgaaagggga atgtttcctg cccgttgatc gcgtcactac 300
agggatcctc aggcacccac tgcgaggagg ccagcagcct ggccgaacac aagctcaagg 360
acgtgcgcga gaagatggcc gacttggcgc gcatggaaac cgtgctgtct gaactcgtgt 420
gcgcctgcca tgcacgaaag gggaatgttt cctgcccagc cgcttgagac caccgcagc 480
tcgaaaaata ataagcttga cctgtgaag 509